

ENTRY NO. ....C65..... Date .....  
 Name of Machine .. University of California Davis 76" Cyclotron .....  
 Institution ..... Crocker Nuclear Laboratory (CNL) .....  
 Address ..... University of California, Crocker Nuclear Laboratory, Davis, CA, USA 95616-8569 .....  
 Tel ..(916). 752-1460..... Telex ..... Fax (916) 752-0952 ..... EMAIL rgflocchini@UCdavis.edu .....  
 In Charge: .. Dr. Robert G. Flocchini, Director ..... Reported by: .. CNL Personnel .....

**HISTORY**

MILESTONE DATES:  
 Design ORIC Copy ..... Model Tests .....  
 Construction 1964-1966 ..... First Beam 1966 .....  
 DESIGN/CONSTRUCTION BY:  
 in house ..... other W.M. Brobeck & Associates .....  
 COST: Accelerator \$1,400,000 ..... Facility \$4,500,000 .....  
 FUNDED BY: .. AEC .....

**STATUS**

STAFF: Machine  
 Scientists ..... 1 ..... Engineers ..... None .....  
 Technicians ..... 8 ..... Students ..... 2 .....  
 Research (in house/external)  
 Scientists ..... / ..... Engineers ..... / .....  
 Technicians ..... / ..... Students ..... / .....  
 BUDGET: Machine ..... Funded by Recharge .....  
 Research ..... Funded by Recharge to Grant of User .....  
 TIME DISTRIBUTION:  
 Basic Research (in house/external) ..... 5 % / ..... %  
 Applied Program (in house/external) ..... 35 % / ..... 30 %  
 Development ..... % Maintenance ..... 15 %

**MAGNET**

POLE PARAMETERS:  
 Diameter ..... 193 ..... cm R<sub>extract</sub> ..... 80 ..... cm R<sub>inject</sub> ..... cm  
 HILL PARAMETERS: Gap (min) ..... 19 ..... cm B<sub>max</sub> ..... 2.27 ..... T  
 (Q ..... AT) Gap (max) ..... cm B<sub>min</sub> ..... T  
 VALLEY PARAMETERS: Gap (min) ..... 71 ..... cm B<sub>max</sub> ..... T  
 (Q ..... AT) Gap (max) ..... cm B<sub>min</sub> ..... 1.27 ..... T  
 AVERAGE FIELD: < B ><sub>min</sub> ..... T < B ><sub>max</sub> ..... 1.75 ..... T  
 NUMBER OF SECTORS: compact/separated ..... 3 ..... / .....  
 sector angle ..... deg. spiral (max) ..... 30 ..... deg.  
 FIELD TRIMMING: Trim Coils ..... 10 .....  
 Harmonic Coils ..... 3 .....  
 Other ..... 3 Valley Coils .....  
 CURRENT: Main Coils ..... 4,000 ..... Amps Stability ..... 5 x 10<sup>-4</sup> .....  
 Trim Coils ..... 800 ..... Amps Stability ..... 5 x 10<sup>-4</sup> .....  
 Stored Energy (cryogenic) ..... MJ  
 WEIGHT: Iron ..... 268 ..... Conductor ..... 42 .....  
 ION ENERGY: Bending Limit E/A = ..... 90 ..... q<sup>2</sup>/A<sup>2</sup> MeV/u  
 Focussing Limit E/A = ..... q/A MeV/u

**ACCELERATION SYSTEM**

FUNDAMENTAL ACCELERATION:  
 Description: .. Dep. 1 .....  
 No. of Gaps/turn ..... 2 ..... dE/dn(max) ..... 0.14 ..... MeV/q  
 Voltage(max) ..... 0.07 ..... MV Harmonic f<sub>r1</sub>/f<sub>ion</sub> ..... 3:1 .....  
 Freq ..... 7.3, 59, 22, 5 ..... MHz Power in(max) ..... 0.15 ..... MW  
 Stability: Phase ± 10 Deg ..... Voltage ..... 0.005 .....  
 OTHER CAVITIES (Flattopping or otherwise):  
 Description: .. None .....  
 Region of Influence: R<sub>min</sub> ..... cm R<sub>max</sub> ..... cm  
 No. of Gaps/turn ..... dE/dn(max) ..... MeV/q  
 Voltage(max) ..... MV Harmonic f<sub>r1</sub>/f<sub>ion</sub> .....  
 Freq ..... MHz Power in(max) ..... MW  
 Stability: Phase ..... Voltage .....

**VACUUM SYSTEM**

OPERATING PRESSURE: ..... 10<sup>-7</sup> Torr .....  
 PUMPS: No. and type ..... 32 in. x 35 in. Diffusion Pumps .....  
 ..... Two 300 CFM Mechanical Pumps .....

**ION SOURCE(S)**

Type	Intensity (mA)	ε <sub>n</sub> = βγϵ (πmm mrad)	Ion Species
(a) P.I.G. Hot Fil.	2.0ma		Positive Ion
(b) .....			
(c) .....			
(d) .....			

**INJECTION SYSTEM**

..... None ..... Efficiency ..... %

**EXTRACTION SYSTEM**

..... Electrostatic + 2 Magnetic ..... Efficiency ..... 30-90 %

**CHARACTERISTIC BEAMS**

Accelerated Ions	E/A (MeV/u)	Current(part μA)	
		Internal	External
(a) Protons	4 - 68	60	30
(b) Deutrons	15 - 45	60	30
(c) Alphas	16 - 90	60	30
(d) .....			

  

Secondary Particles	E (MeV)	part/sec
(a) Neutron		15 - 65 x 10 <sup>6</sup>
(b) .....		
(c) .....		

EXTRACTED BEAM PROPERTIES:  
 For ..... 1.0 ..... μA of ..... 67.5 ..... MeV/u Proton ions  
 ΔE/E ..... 0.4 ..... % Δφ ..... °rf  
 ε<sub>n</sub> = βγϵ x ..... πmm mrad z ..... πmm mrad

**FACILITIES FOR RESEARCH**

SHIELDED AREA: Fixed ..... 360 ..... m<sup>2</sup> Moveable ..... None ..... m<sup>2</sup>  
 Target Stations: ..... 9 ..... No. Served At Same Time: ..... 1 .....  
 MAGNETIC SPECTROMETERS: .....  
 OTHER FACILITIES: .....

**REFERENCES/NOTES**

(a) .....  
 (b) .....

**PLAN VIEW OF FACILITY, COMMENTS**

